

Brookfield Power Water Appropriation and Use Permit – Stakeholder Process

Maryland Department of the Environment – Water Supply Program (MDE WSP)

March 8, 2011

Background/Findings

1. MDE WSP was requested to review the Brookfield Power permit for use of water from Deep Creek Lake by the Deep Creek Lake Policy and Review Board. They particularly pointed toward the change in the Temperature Enhancement Protocol and the change in the whitewater release schedule from the 2007 permit as impacting the lake levels and negatively impacting the boating season. MDE WSP and DNR Power Plant Research Program evaluated the impact of these permit changes and has concluded that the changes represent an average lake level reduction of approximately 0.3 feet during the boating season.

2. The existing (2007) permit represents a consensus position that was arrived at through the stakeholder process. MDE WSP is committed to continue working through the issues with the stakeholders and seeking a consensus, if possible, for changes to the permit. Permit conditions are to provide greatest feasible utilization of the waters of the State, adequately preserve public safety, and promote the general public welfare. MDE WSP has read and considered all recommendations submitted by stakeholders at and since the meeting held on February 9, 2011 and is committed to looking for ways to mitigate impacts not fully anticipated in the 2007 permit. MDE WSP respects the need for permit holders and impacted parties to have consistency and also recognizes its broad permit authority to establish necessary permit conditions.

3. The primary beneficial use of water under the Brookfield permit is for power generation. Renewable energy resources are of significant importance to the State. The other uses identified in the permit include temperature enhancement, whitewater boating enhancement and maintaining minimum flows in the Youghiogheny River. Conditions are placed on the permit to enable joint beneficial use of water for recreation (both whitewater and recreational boating on the lake) and to compensate for lost fishery

habitat as a consequence of creating the lake and eliminating the flow in the natural stream channel of Deep Creek. Such additional beneficial uses are of great importance to the State and local economy also.

4. Variable climatic conditions lead to a different lake level trajectory for each year. The last 10 years average lake level approximates the rule band “mid-line” for the July through September period. During 2008 lake levels were above the mid rule band level from June through September 30. During 2009 lake levels were above the mid rule band level from June through September 1. During 2010 lake levels were below the lower rule band after the first week of August. 2010 represents a year with the least amount of inflow into the Lake from July through September for the past 69 years (the period of record). While an extreme year, such as 2010 should not drive the permit conditions, it is reasonable to consider ways to improve the current permit to ensure that enough water is available at the beginning of the summer season, that water is used as efficiently as possible and that reductions in water use occur during drought years.

5. The lake level rule band was developed in the early 1990s and should be an attainable goal for a significant majority of the time. An important consideration in developing the rule band was that ideal lake levels should be above 2458 elevation from June through September. The MDE WSP has been informed that the DNR park manager has reported receiving complaints of low lake levels from some cove property owners when lake levels reach around 2459 elevation. There appears to be an inherent conflict with the rule band and the ability of some property owners to readily access the lake at some cove locations. More detailed bathymetry and sedimentation study is needed for this issue to be resolved. Other factors and other solutions should also be considered to address this issue.

MDE Water Supply Program Recommendations

1. Proposal on the Rule Band:

- a. MDE WSP is proposing to extend the Upper Rule Band Elevation at 2461 for the full month of July. MDE accepts the proposed change to the Upper Rule Band as suggested by the DCLPRB.
- b. MDE WSP is proposing to grant Brookfield Power additional flexibility to accommodate periods of high inflow from May through October. An examination of the lake level profiles for the past decade shows various years when lake levels exceeded 2461 and other upper rule band elevations. The following permit language is under consideration for Condition 14. New text in bold.

THE PERMITTEE SHALL OPERATE THE DEEP CREEK
HYDROELECTRIC PROJECT (PROJECT) ACCORDING TO THE
PROJECT OPERATING RULES SPECIFIED THROUGHOUT THIS
PERMIT SUCH THAT WATER ELEVATIONS IN DEEP CREEK LAKE
ARE MAINTAINED WITHIN THE OPERATING RULE BAND, **EXCEPT**
THAT EXCURSIONS OF UP TO 0.3 FEET ABOVE THE OPERATING
RULE BAND LASTING NOT MORE THAN 21 DAYS ARE
ALLOWED FROM MAY THROUGH OCTOBER, AND EXCEPT IN
THE EVENT OF UNUSUAL OR EMERGENCY CONDITIONS AS
DEFINED BELOW.

(A)–(D) as is

(E) ACTUAL OR FORECAST EXTRAORDINARILY HIGH
RUNOFF OF RAINFALL WHICH REQUIRES UNLIMITED
GENERATION IN ORDER TO KEEP THE LAKE LEVEL (delete
- below the upper rule band and/or to avoid) **FROM SPILLING
OVER THE TOP OF THE DAM SPILLWAY.**

MDE WSP is not proposing to modify the Lower Rule Band. Additional study on the amount of accumulated sediment and measuring of the cove bathymetry is underway and needs to be completed in order to make any decision on modifying the lower rule band.

2. Temperature Enhancement Releases

- a. MDE WSP is proposing to eliminate the need to run the TER protocol on scheduled WWR days. Condition 19. A. III will read

**(III) SYNCHRONIZATION OF WWR WITH TER. ON SCHEDULED
WWR DAYS THE PERMITTEE IS NOT REQUIRED TO RUN THE
TER PROTOCOL, UNLESS THE WWR WOULD NOT OCCUR DUE
TO LOW LAKE LEVELS.**

- b. The most current flow and weather condition measurements will be used in the TER protocol. This does not require a permit modification. The flow information on the Youghiogeny at Oakland is current to within one hour.
- c. DNR PPRP has determined that changing the protocol to a local weather station will require further investigation. The Garrett College station does

not maintain cloud cover data. Adopting local weather data into the model may be able to be implemented in the 2012 season.

MDE WSP is not proposing other changes to the TER protocol.

3. Establishing drought triggers and modifying permit conditions for when drought trigger would be met.
 - a. MDE WSP would only set a drought trigger(s) if there were to be changes in other permit conditions based on the trigger(s). MDE is still exploring the potential for reducing the required 9 cfs discharge to 4.5 cfs and a corresponding requirement to reduce the minimum flow in the Youghiogheny from 40 cfs to 35.5 cfs during periods when the 4.5 cfs requirement would be in effect. A discharge of 4.5 cfs represents the average 85th percentile flow for the Deep Creek Lake watershed for the summer months of July through October. MDE WSP often uses the 85th percentile passing flow for aquatic protection for impoundments. A discharge of 9 cfs represents a 65th percentile passing flow. MDE WSP has not fully explored the ramifications of modifying the discharge with either Brookfield Power or DNR fisheries. The significance of the change during a year like 2010 would be a savings of about 0.25 feet of lake level. The issues involved with changing the discharge quantity are: a) not knowing exactly what the discharge currently is, b) impact on Brookfield's ability to maintain black start capacity and associated requirements of the North

American Electric Reliability Council, c) costs associated with reducing wicket gate leakage if needed and d) impacts of a reduced flow on the cold water refugia currently provided by the leakage. The first phase of the effort is to receive actual flow measurement from Brookfield of the discharge in the tailrace. Brookfield will be providing MDE this data for review. A requirement to monitor discharge (wicket gate leakage) may be developed. MDE will need to work with DNR fisheries, if reducing the leakage is possible, to determine the impact of reducing this discharge.

- b. A recommendation was made to eliminate the exception that allows one weekly WWR release when lake levels are below the Lower Rule Band. MDE WSP is not proposing to make a change in this permit condition. A map showing areas of Deep Creek Lake affected at various elevations and impacts of sedimentation is likely necessary to fully address this recommendation. The bathymetry and sedimentation work being carried out by DNR will be necessary help evaluate this recommendation.